

# The Impact of Digital Economy on Corporate Green Technology Innovation

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**Abstract:** In the context of high-tech innovation, digital technology, as an important driver of China's comprehensive deepening of reforms and the completion of the "14th Five-Year Plan", plays an important role in China's future industrial structure upgrade and social development. As a new form of economy, the digital economy is based on high-tech information technology and digital industry. With the development of the digital economy in recent years, it now occupies an important position in the global economic ecology, especially in China. In recent years, the central government has continuously The development of digital economy was mentioned in all four economic work conferences. The development of the digital economy further deepens corporate green technology innovation.

**Keywords:** Digital economy; green technological innovation; economic growth; economic ecology; green development.

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## 1. Introduction

As an important part of China's economic development, the digital economy has received full attention in recent years. At present, the academic community does not have a unified conceptual definition of what the digital economy is. Most scholars believe that the digital economy is a new economic ecology built on new high-tech information technologies such as cloud computing and big data. With the continuous in-depth development of various high-tech industrial technologies in various fields of society, the application and popularization of the digital economy have also been further improved. In 2015, the State Council proposed a big data strategy and is committed to promoting the development of domestic digital society. Since then, domestic digital information technology and infrastructure have developed rapidly, various digital businesses and digital technologies have been constantly innovated, and digital industrialization has also achieved new developments. Although high-tech industries, information technology and digital informatization fields started late in China, with the strong support of domestic policies and the integrity of the domestic industrial structure, my country's digital economic development has achieved great results. Since vigorously promoting the development of the digital economy in 2015, China's digital economy business has developed rapidly. According to the "China 2022 Digital Economy Theme Report" released by Tianyancha, the total scale of China's digital economy has reached 50.2 trillion by the end of 2022. Yuan, ranking second in the world, with a per capita digital economy industry volume of approximately 35,300.

The scale of China's digital economy has been continuously rising from 2015 to 2022, and its proportion in GDP has also continued to increase. From 2015 to 2022, the total scale of the digital economy has grown from 18.6 trillion to 50.2 trillion. The digital economy's share of GDP increased from 27.2% in 2015 to 41.5%, an increase of 14.3%. It can be seen that the digital economy occupies an important position in China's economic development and is an important issue in the current domestic economic development.

## 2. Literature Review

The digital economy occupies an important position in China's economic development. Promoting the efficient and sound development of the digital economy plays an important role in the future development of Chinese society. At present, the development of China's socialist market economy has entered an advanced stage. However, the international situation and domestic economic components It will bring certain challenges to future economic development. Therefore, China's new economic growth needs to be reasonably optimized in the future. The digital economy can promote China's economic transformation and promote China's economy to enter a new form. Therefore, it is of great social significance to study the influencing factors of the digital economy and the specific impact of the digital economy on social development. At present, there are many related studies on digital economy in academic circles, which mainly focus on exploring issues in the fields of digital economy and technological innovation, industrial structure changes, economic development, social development, etc. The following is a literature review of current related research:

### (1) Promotional role of digital economy

Regarding the impact of digital products such as digital technology, digital industrialization, digital finance, and digital economy on the economy, judging from the current research results, the main conclusions are that they promote economic development. Research by Zhang Lei and Zhang Peng (2016) shows that in the current era of the rise and widespread application of Internet technology, the development of the Internet economy can promote the overall economic development of Chinese society. The use of the Internet economy can reduce social costs, optimize China's economic structure, and promote the market Economic changes. Xue Ying and Hu Jian (2020) believe that financial technology in the current Internet era can improve the resource allocation capabilities of the market economy, fully improve total factor production efficiency, and play an important role in promoting future economic development. Jing Wenjun and Sun Baowen (2019) conducted a study on the relationship between the development of the digital

economy and the high-quality development of the economy based on the current background of declining economic growth. They used spatial panel data and found that the digital economy can improve productivity by investing in new factors and total factor productivity. As well as the efficiency of new resource allocation, three different ways have a positive effect on economic development. Ge Heping and Wu Fuxiang (2021) used provincial panel data from 2016 to 2018 to conduct research and found that the digital economy can improve economic efficiency, reduce economic constraints, and has a significant role in promoting the development of China's market economy. Zhang Teng, Jiang Fuxin et al. (2021) conducted empirical testing and analysis from multi-dimensional perspectives such as social governance, environmental change, and economic development. The study found that although the digital economy promoted China's economic development, it also lowered the stability of development. At the same time, The promotion effect on the quality of the national economy is weak. Wang Yanan, Ye Xin et al. (2020) conducted an empirical analysis on the development of digital finance and the real economy. The results showed that digital finance has a significant promoting effect on the overall development of the real economy, but there is spatial heterogeneity. The promoting effect on the east is significantly larger than the Midwest. In his research on the mechanism of digital economy promoting economic development, Ding Zhifan (2020) analyzed by establishing a micro-medium-macro perspective framework and found that the micro perspective mainly uses the digital economy to form and improve economies of scale and improve industrial allocation efficiency. From a meso perspective, it mainly promotes industrial integration and corporate technological innovation, while from a macro perspective, it mainly promotes total factor production efficiency and in-depth capitalization. Research by Zhang Xun and Wan Guanghua (2019) shows that the development of digital economy and digital finance can reduce social costs and promote inclusive growth in China. Li Xue and Wu Fuxiang (2021) found that in general, the digital economy plays a significant role in promoting regional innovation performance, but there is still spatial heterogeneity. Regions with higher levels of digital economy development are more obvious, and the level of digital economy issuance is lower. In low areas, the effect is weak. On the role of other aspects of the digital economy: Wen Jun and Yan Zhijun (2020) believe that the application of the digital economy can promote social innovation, improve national innovation development, and promote domestic industrial transformation. However, the results vary due to different regions, and the level of digital development The promotion effect of digital economy is greater in higher regions. He Zongyue and Song Xuguang (2020) used CFPS panel data for empirical analysis. Taking into account the endogeneity of the model, the digital economy has a more significant promotion effect on employment in non-agricultural industries, and it also has certain implications for entrepreneurs when choosing the type of entrepreneurship. Positive effect. Du Chuanzhong and Zhang Yuan (2021) found that the development of digital economy can promote the improvement of scale effect and innovation effect, and can also promote the improvement of enterprise labor productivity.

## (2) Green technology innovation and economic development

With the continuous advancement of the sustainable

development strategy and the continuous deepening of new development concepts (innovation, coordination, green, openness, and sharing), in order to solve the constraints of resource constraints, environmental constraints, innovation constraints, etc. that exist in the Chinese economy, in recent years In recent years, social development and policy guidance have increasingly tended to build new, green development models, and more and more attention has been paid to the role of green ecological construction in promoting technological innovation and economic development. Research on green technology innovation and economic development has also become a widely discussed issue in academic circles in recent years. Fu Yuanhai and Tang Weibing (2010) mentioned in their research that technological progress has a significant promoting effect on economic growth, and improving enterprise technology upgrading is of great significance to China's future economic and social development. Cheng Yu and Chen Xue (2013) found in their research that innovation-driven development can promote economic growth in development zones. Wang Hailong and Lian Xiaoyu (2016) used the DEA method to measure regional green economic growth and green technology innovation, and found that my country's green technology innovation is affected by regional factors on green economic growth, and the results vary greatly. Economic growth in high-quality development regions higher. Fan Dan and Sun Xiaoting (2020) used dynamic provincial panel data to conduct empirical analysis. The results showed that environmental regulations have a certain inhibitory effect on corporate green innovation. Reducing environmental regulations and improving corporate green technology innovation will significantly promote the development of corporate green economic growth. Function, but it is also subject to regional restrictions, and the specific functions also vary. Yan Guiquan and He Yucheng (2019) used the SBM model to conduct research. The research results show that green technology innovation has a significant promoting effect on the economic growth of the agricultural industry. Guo Bingnan and Wang Yu (2022) used city panel book data to conduct research. The results showed that the digital economy has a promoting effect on green technology innovation and can also promote the upgrading of industrial structure. Meng Wangsheng and Zhang Yang (2020) used the DEA model to study panel data on green economy and technological innovation. The study found that technological innovation can promote the development of green economy and improve the efficiency of regional green industry development. The research by Song Xiaoling and Li Jinye (2021) also mentioned that technological innovation can drive the development of green economy, but there is still regional heterogeneity, and the role of developed regions is more significant. Feng Fei, Feng Xuegang et al. (2020) used urban panel data to conduct an empirical analysis of economic growth and the environment. The results showed that economic growth will drive environmental benefits, promote environmental optimization, and also accelerate technological innovation. In the research of Han Xianfeng and Li Jijia (2023), it was found that green technological innovation has a significant promoting effect on the upgrading of industrial structure. However, affected by the industrial structure of industrial zones and regional differences, its effect has different manifestations, but the overall situation is that industrial structure upgrading and economic growth effect. Qi Yikang's (2023) study further proved the role of green financial development and

technological innovation in promoting economic growth, but there is still the problem of regional heterogeneity. Ye Juanhui and Ye Azhong (2023) used semi-parametric spatial panel analysis on provincial panel data, and the results further proved the promoting effect of green technology innovation on economic growth.

### 3. Conclusions and Suggestions

#### 3.1. Conclusion

High-tech industrial innovation has a significant role in promoting social progress. The digital economy, as a new economic form based on high-tech information technology and digital platforms, has received widespread attention in recent years. The development of the digital economy plays an important role in the future economic development of China. As an important part of the current green ecological construction of domestic enterprises, green technology innovation is related to the digital economy, and it also plays a vital role in the development of the digital economy and economic development. The article draws the following conclusions based on the previous research: First, the digital economy has significantly promoted economic growth. Second, green technological innovation has significantly promoted economic growth. Green technology innovation is mainly used for the sustainable development of society. As an important promoter of social development, green technology innovation plays a significant role. Judging from the empirical results, there is a significant positive correlation between green technology innovation and economic development, and the previous relevant research has also confirmed this. Third, green technology innovation has a significant mediating effect on the relationship between digital economy and economic development. From the empirical results, green technology innovation affects the relationship between digital economy and economic development. Under the influence of green technology innovation, There is still a significant correlation between digital economy and economic development.

At the same time, the digital economy provides strong technical support for green technology innovation by promoting the digitalization process of enterprises. The digital economy involves the application of emerging technologies such as big data, cloud computing, Internet of Things, blockchain, and artificial intelligence. These technologies provide enterprises with rich data resources and processing capabilities, helping enterprises to better understand market demand and optimize Product design, improve production efficiency, thereby promoting the development of green technology innovation. Moreover, the digital economy can help improve corporate social responsibility performance, thereby promoting green technology innovation. In the era of digital economy, corporate social responsibility has attracted increasing attention, and more and more companies have begun to pay attention to sustainable development and environmental protection. This trend makes companies more inclined to adopt green technology innovation to reduce negative impacts on the environment and enhance the company's social image and reputation. In addition, the digital economy promotes the development of green technology innovation by increasing corporate R&D investment. In the context of the digital economy, companies are facing more intense market competition. In order to maintain competitive advantages,

companies need to increase investment in research and development and explore new technology paths and product applications. This kind of investment not only helps improve the technological level of enterprises, but also provides more possibilities for green technology innovation.

#### 3.2. Suggestions

Accelerate the development of digital technology. Digital technology is an important guarantee for the rapid development of the digital economy. Accelerating the development of digital technology can provide a solid guarantee for the development of the digital economy. Through the optimization of digital technology, the application fields of the digital economy can be continuously improved and the operational guarantee of the digital economy can be strengthened.

Increase the promulgation of favorable policies for the digital economy. The development of the digital economy has been mentioned in the past four Central Economic Work Conferences. The digital economy has become an economic issue that the country attaches great importance to. However, due to the economic development level of each region and the fields and time issues involved in the promulgation of government policies, the actual situation of each region Policies are also very different. To this end, the promulgation of favorable policies related to the digital economy should be accelerated to promote the development of the digital economy in the region.

Improve higher education and continue to attract talents. Talent, as the core driving force of current national development, plays an important role in economic development. Each region should continuously improve the level of scientific education and higher education in the region, cultivate more talents, and at the same time introduce talents to continuously provide impetus for regional development.

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